Subject Code CST-292	DESIGNING AND ANALYSIS OF ALGORITHM	L	T	P	S	Cr
		3	0	0	0	3.0
	Total Contact Hours : 45Hours					
	Common to all Specializations of CSE 2nd Year					

Marks-100	
Internal-40	External-60

Course Objectives

- To analyze and design different algorithms based upon different designing approaches.
- To choose appropriate algorithm design techniques for solving real time problems.
- To apply and synthesize efficient algorithms.

Unit		Course Outcomes
I		Student will learn to analyze and design different algorithms.
II		Student will be able to choose appropriate algorithm design techniques for solving real time problems.
III		Student will be able to synthesize efficient in common engineering design problems.

Contents of the Syllabus

UNIT-I   [15h]

Algorithm performance analysis : Worst, Average and Best case analysis. Asymptotic notations : Big-Oh, Big-Omega, Big-Theta. Time and Space complexity calculations. Analysis of iterative and recursive algorithms. Recurrence equations and their solution; substitution method & master theorem.

Divide and Conquer : Understanding of divide and conquer approach, Algorithms for Find Min and Max, Quick Sort, 2 Way Merge Sort, Strassen's matrix multiplication and Binary Search.

UNIT-II   [15h]

Greedy Method : Understanding of greedy approach, Greedy algorithms for Knapsack Fractional Problem, Job Sequencing Problem, Huffman Coding.

Dynamic Programming : Understanding of dynamic programming approach, Algorithms for 0/1 Knapsack problem, Longest Common Subsequence problem, Travelling Salesman Problem. Single Source Shortest Path : Bellman Ford Algorithm. All-Pair shortest path problem: Floyd-Warshall algorithm.

UNIT-III [15h]

Advance Data Structure : Red-Black Tree : Rotation, insertion and deletion. B-Trees : insertion and deletion.

String Matching : The native string matching algorithm and Rabin-Karp algorithm.

Computational Complexity : Introduction to P, NP, NP-Hard and NP-Complete; Deterministic & Non Deterministic algorithms.

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Text Books:

1. "Introduction to Algorithms", 3rd Edition, Thomas H Cormen, Charles E Lieserson, Ronald, Prentice Hall of India.
2. "Fundamentals of Computer Algorithms", Horowitz, Sahni and Rajasekaran, 2nd Edition, University Press.

Reference Books:

1. "Data Structures using C and C++", Tanenbaum, Augenstein and Langsam, 2nd Edition , Prentice Hall of India.

Subject Name	Subject Code	PO-CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
DAA	CST-292	CO1	3	2	3	2	2	3	3	2	1	1	1	3
		CO2	3	3	3	2	2	3	3	1	1	1	2	3
		CO3	3	3	3	2	2	3	2	1	1	1	2	3